



Landsat Science Team / January 2013

Integrating Field-Level Biophysical Metrics Derived from Landsat Science Products into a National Agricultural Data Warehouse

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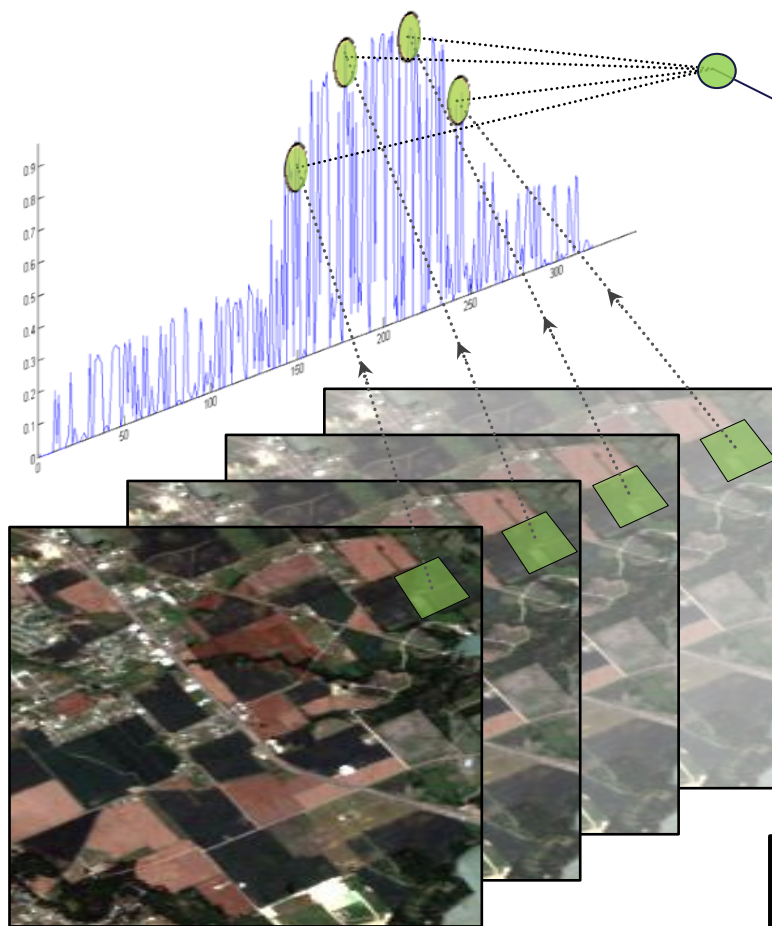
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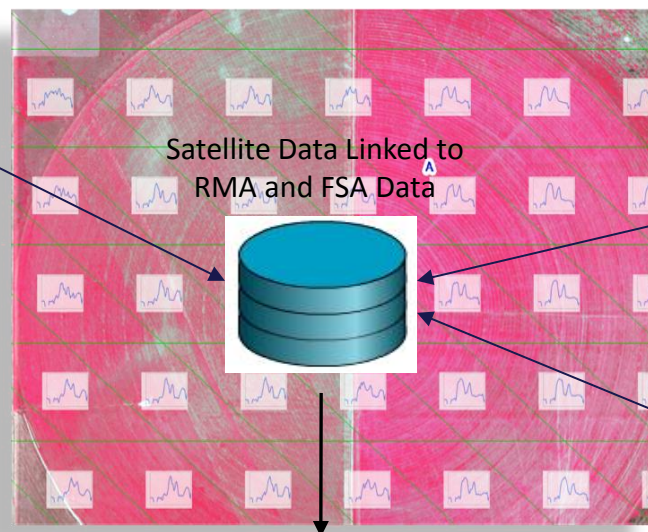


Spot Check Claims Validation

PP Claims - Growth Curves



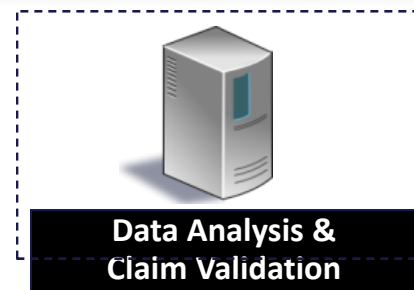
Daily MODIS Data Derives Growth Curves



RMA Data



FSA Data



Growth Curves Linked to RMA and FSA Data are Used to Validate Producer Claim Reporting

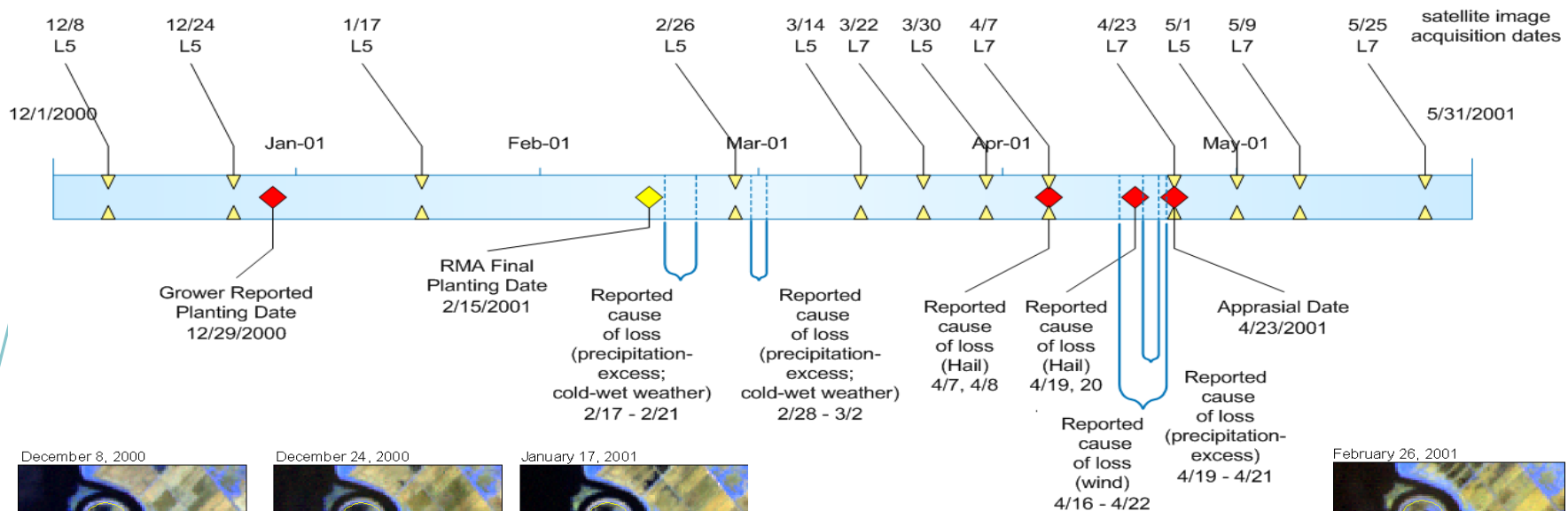
Forensic Remote Sensing



Friday, December 10, 2010

Crop & Satellite Image Timeline

Crop Year 2001 Timeline: WHEAT



December 8, 2000



December 24, 2000



January 17, 2001



Standing water and water saturated soil is evident on numerous fields December 8, 2000 through January 17, 2001.

The area under standing water and water saturated soil increases through January 17, 2001. Most of the standing water or water saturated soil is gone by February 26, 2001.

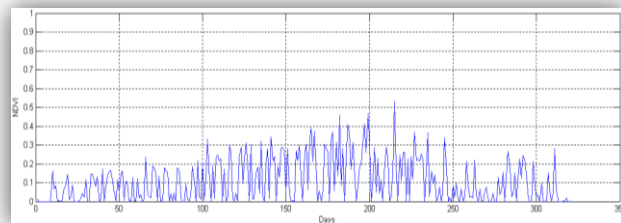
February 26, 2001



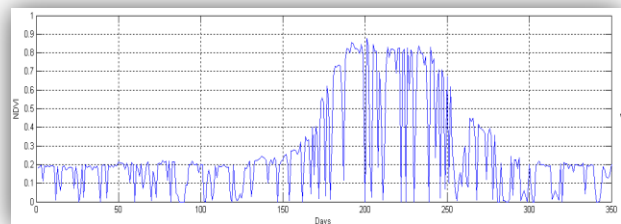
Automated Claims Analysis



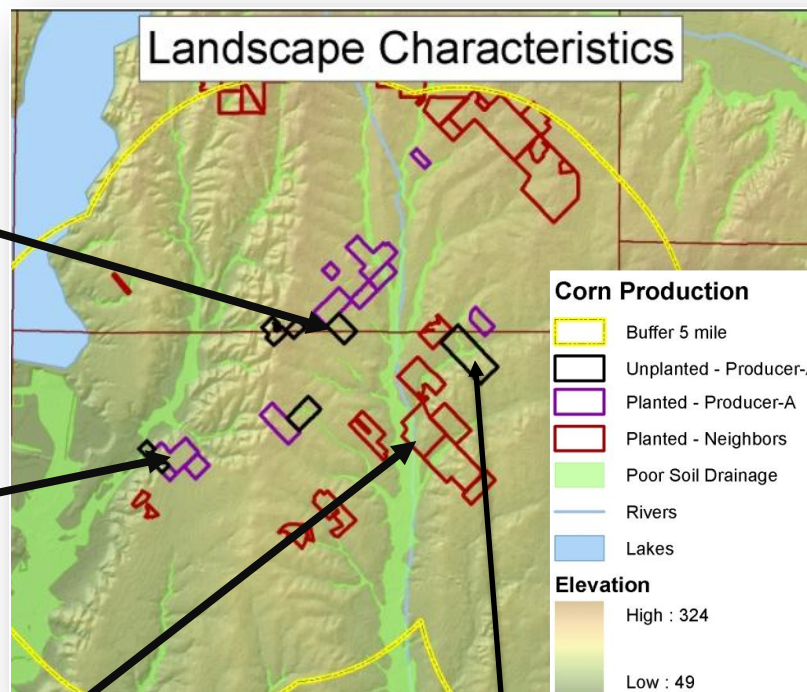
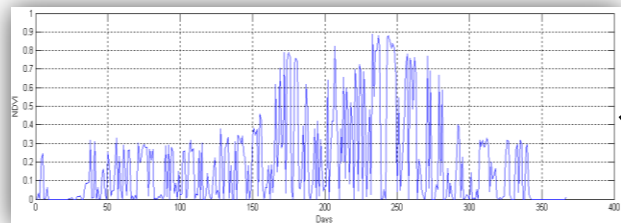
No Crop Growth



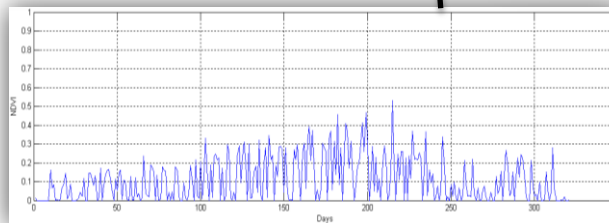
Crop Growth



Crop Growth



No Crop Growth



Spot Check Claims Validation

Hail Claims

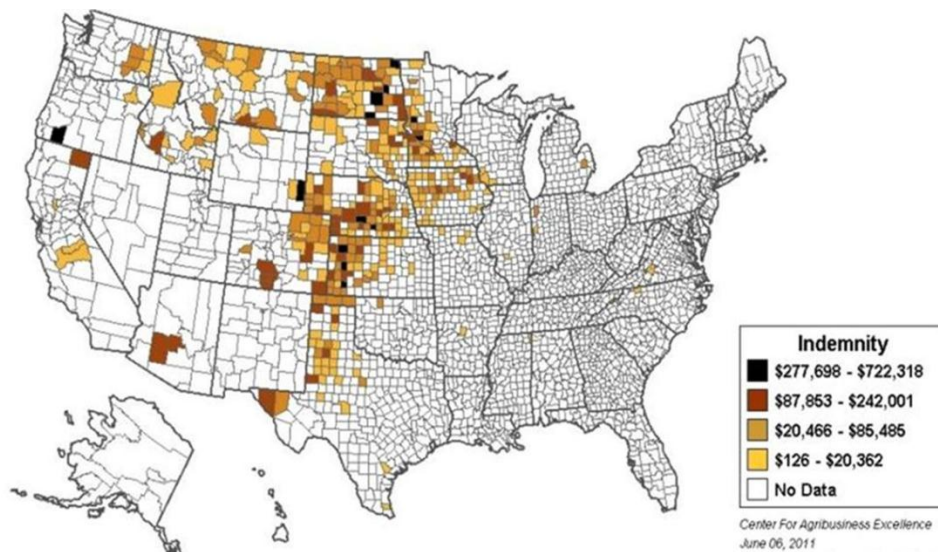
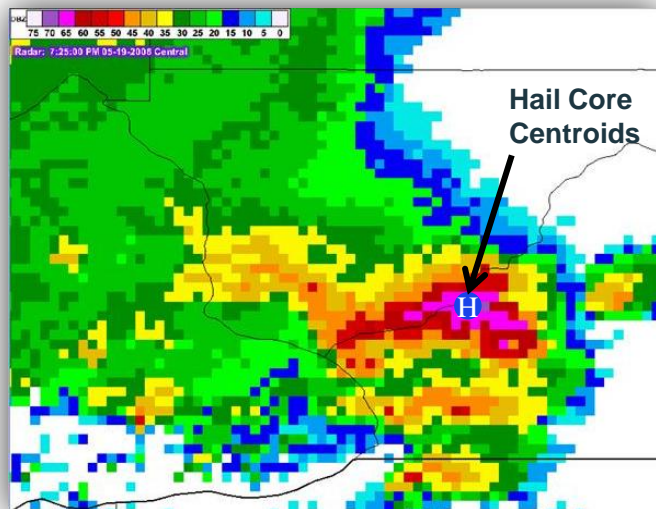
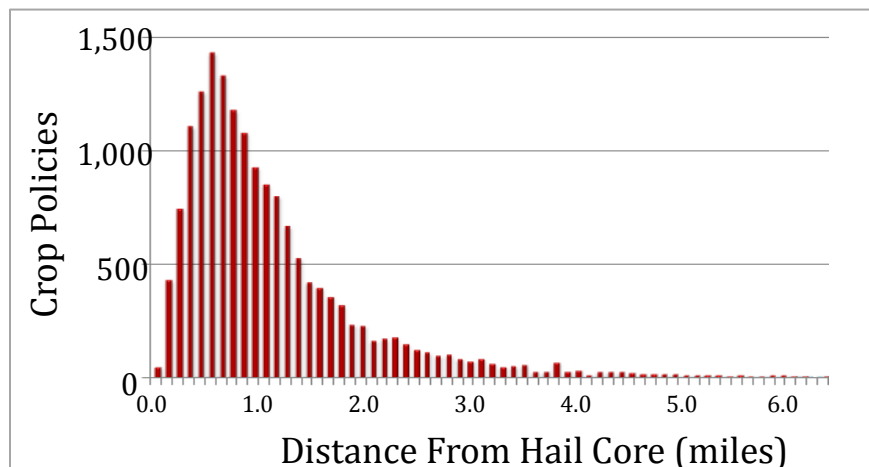


Average Hail Claims

- 0.13 Miles From a High Reflectivity Radar Value
- 1.32 Miles From the Center of the Hail Core

Anomalous Hail Claims

- 3.3 Miles or Greater From a Reflectivity Value Over 54
- 5.0 Miles or Greater From the Center of the Hail Core



Mission & Primary Goals of Data Mining in RMA



Use Data Mining And Data Warehousing Technology To Prevent Fraud, Waste And Abuse In The US Crop Insurance Program

1. Develop & assist in implementing key strategies in prevention of fraud, waste and abuse in the US Crop Insurance Program
2. Determine impact & influence of factors external to the crop insurance program (weather, crop quality, markets, public policy)
3. To create a single warehouse of crop insurance data
4. To use this data and relevant data mining & statistical tools to decrease program vulnerability

Ultimate goal:

- Enhance integrity of FCIC in compliance with 7 USC 1514 section 515(j)(2) of the Federal Crop Insurance Act

ARPA 2000 SECTION 515(J)

Where can Landsat help?




- Goal: (1 year out from LDCM/Landsat 8) Increase integrity of crop insurance program through three broad objectives.
 - Predict indemnities (increases financial integrity allowing for Agency to prepare for losses as they occur)
 - Increase efficiency of processing large claims (claims greater than \$200,000) – required by Standard Reinsurance agreement (SRA); authority 7 CFR Part 400
 - Evaluate claims against empirical data
 - Weather
 - Landsat derived vegetation index deltas
 - Other RS & geospatial data sets



Year 1 Metrics Generation & Goals



- We will quantify impact of RS augmented data mining (Landsat, MODIS, etc.) by generating cost avoidance metrics based upon identified scenarios.
 - We will analyze Landsat data for augmenting program specific challenges, in the following areas:
 - High Risk Land (refining rating area maps) – quantify exposure and impact of program changes.
 - Prevented Planting Mapping
 - Refining crop-type suitability mapping vs. actual planted acres.
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Questions?



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